EXHIBIT 38

camfil

HEALTH CARE FACILITIES

CLEAN AIR SOLUTIONS

WHAT'S IMPORTANT NOW. . .

Only Camfil Can Deliver Maximum Cost Savings in All Four Categories

WHAT'S *COSTING* YOU MONEY? WHAT'S *MAKING* YOU MONEY?

Every health care manager faces these questions daily. Cost has become the dominant factor in purchasing, and no operations item is exempt.

Camfil, the world leader in air filtration technology for every application in health care, has a solution for managing the new, *"Cost is King"* reality we face. At its heart: a solid, proven strategy for achieving the air quality levels needed, while delivering significant and immediate savings in four critical areas:

- **Direct dollar savings in HVAC energy costs,** and compliance with Energy Smart standards by Department of Energy

- **Substantially reduced risk of hospital-acquired infections,** and the Medicare/Medicaid reimbursement difficulties these events now create

- **50% annual reduction in filter waste sent to landfills.** Also, important advantages for facilities which are working with sustainability initiatives

- **Total cost of ownership savings** that give Camfil filtration a substantial cost advantage compared to the commodity products sold by major buying groups.

The Camfil health care strategy is centered on value: delivering the best, proven solutions for each individual environment, so that unnecessary risks, particularly those that involve hospital-acquired infections, are eliminated.

The pages that follow detail various topics of concern and our solutions. We invite your questions and look forward to being of service.

"Even if the filters sold on buying contracts or from lower priced manufacturers were free, they would now cost more in operational expense than Camfil's alternative.

And, unlike Camfil filters, commodity "coarse fiber" filters cannot maintain their IAQ level throughout the filters' life."

ENERGY SAVINGS: NEW OPPORTUNITIES FOR SIGNIFICANT – AND IMMEDIATE – REDUCTIONS

The third largest energy cost item in a health care environment is the energy needed to move air through the heating and air conditioning systems.

Air filtration is generally the single largest component of energy costs, because filters by nature create resistance to airflow. This forces the air distribution fans to work harder and use more energy. So, the question becomes, *"is it possible to achieve optimum filtration in each area of the facility, maintain rated efficiency through the life of each filter, and reduce energy costs?"*

In fact, it's possible to accomplish this, and much more. Camfil's 5-Star premium filters are engineered to significantly and immediately reduce HVAC energy expenditures, while maintaining high contaminant removal performance and requiring less frequent change-outs.

Selecting the proper filter based on average lifetime resistance to airflow *and* the filter's ability to maintain rated efficiency can save a facility 40% of its HVAC energy costs.

The baseline comparison is with the minimal-performance products typically favored by buying groups and other commodity suppliers.

This 40% annual savings is a documented metric achieved in health care environments by Camfil's "30/30®" and Durafil ES® filters, two of the many filter technologies described later in this brochure.

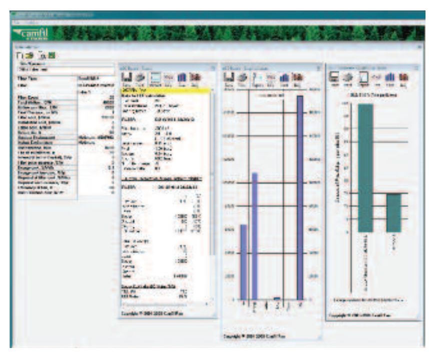
Documentation for this savings was generated by *Life Cycle Cost ("LCC")* analysis. This powerful modeling software factors-in multiple conditions specific to each installation, including hours of operation, utility rates, air contaminants, fan efficiency, labor and more.

Since its inception, it has helped thousands of health care facilities and other institutions around the world reduce both total energy expense, *and* peak demand, by objectively comparing filters from all manufacturers, and identifying the most appropriate filter for each area.

LCC calculates total cost of ownership "TCO" which includes all of the expenses associated with air filtration – the cost of the filters, the labor to install and remove them, filter disposal costs, and of course, the energy used to move air through the filters.

TCO is based on real-life performance, rather than simplistic mathematical charting. Most importantly, it allows discussions of filter alternatives to be based on science, rather than guesswork – or hope.

Life Cycle Costing, a proprietary modeling software by Camfil, provides a powerful tool for supporting the decisions of management to replace less-effective filters with filters that not only provide the proper MERV rating for each application, but produce HVAC-related energy savings that reach the ROI benchmark in 18 months or less.

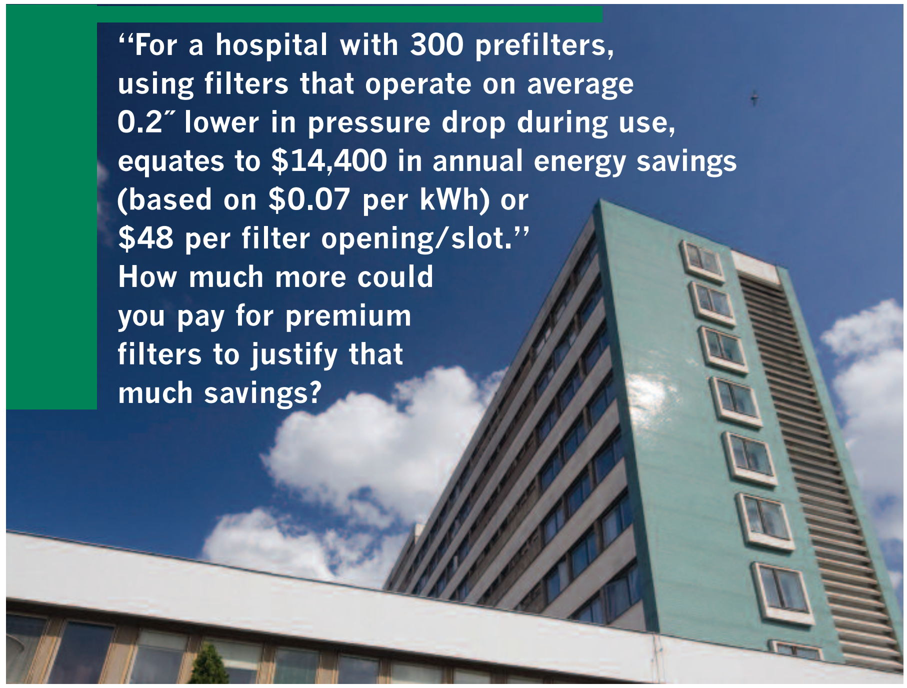


"Selecting the proper air filter can save a facility 40% of its HVAC energy costs."

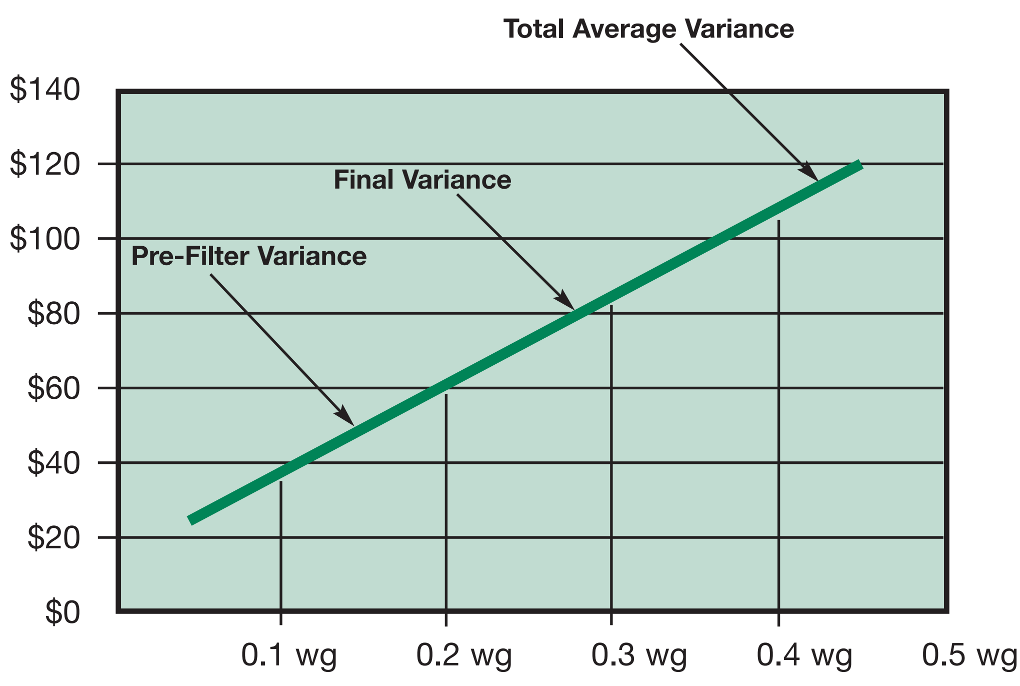
QUANTIFYING ENERGY SAVINGS IN YOUR FACILITY

Lowering static pressure is one of the most effective and measurable ways to immediately reduce the total energy used by your HVAC system.

For every 0.1″ that a facility can reduce the average static pressure, the direct energy savings will be substantial.



Energy Cost vs. Pressure Drop Increase



Average Potential Savings Per Year Per Filter

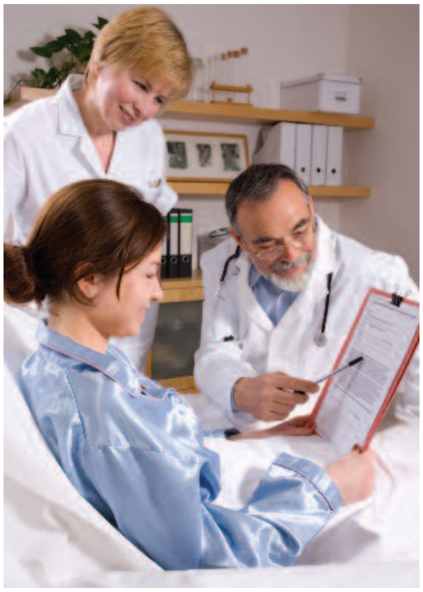
HOSPITAL-ACQUIRED INFECTION RISK OVERVIEW: THE COSTS IN LIVES – AND LIABILITY

In the U.S., one hospital patient in ten – 2 million patients per year – suffers a hospital-acquired infection. Cost estimates for this tragedy range from $4.5 billion to $27 billion annually.

One third of hospital-acquired infections are judged preventable. The Committee to Reduce Infection Deaths – RID – reports that as many as 92 percent of deaths from hospital infections could have been prevented.

Pneumonia is the most costly of all hospital-acquired infections. Fortunately it is among the most preventable, where proper levels of air filtration, and the appropriate number of air changes, are in place.

Camfil can provide a more comfortable environment for patients and staff, *while* lowering the total life cycle costs of filtration as well. Camfil's 5-Star premium air filters are recognized for top-level performance in four critical areas important to health care facilities: energy savings, air quality, waste reduction, and environmental impact.



Recently, entities that fund hospitals through private insurance, Medicare, and Medicaid, have introduced incentives for facilities to improve various performance metrics, including air quality.

As a result, annual increases may be eliminated or restricted if a facility is not performing to a minimum standard of care. In addition, the Centers for Medicare and Medicaid Services are no longer reimbursing for the extra costs of treating patients for some hospital-acquired infections that reasonably could have been prevented. Private insurers are sure to follow.

Finally, consumers provide additional quality incentives. Various government and other websites now allow consumers to select a health care facility based on published data that includes a facility's rate of transfer for hospital-acquired infections. This is good news for every facility that takes infection control seriously.

Hospital-acquired infection is a risk that is highly manageable with the right tools. Now, Camfil has made those tools available. We believe it will send shivers down the spine of every buying group pushing low-grade commodity filters.

"The Centers for Medicare and Medicaid Services are no longer reimbursing for the extra costs of treating patients for some hospital-acquired infections that reasonably could have been prevented.

Private insurers are sure to follow."

SUSTAINABLE PRODUCTS... AND SUSTAINABLE COST SAVINGS

The "green wave" that first gained traction at the turn of the new century has become a tsunami – and with good reason. When "green" is accomplished, it reduces hospital energy consumption, waste, and greenhouse gas emissions.

Hospitals, like other facilities, express the values of the owners, and the community. LEED® certification for health care has become a laudable goal for new facilities, as well as existing hospitals that have served their communities for decades.

Let's begin at ground level.

Disposal costs for red-bagged waste can top $480 per ton or more – 19 times the cost of ordinary solid waste. Regulations in effect in many areas of the country demand that air filters used in medical facilities – high-efficiency filters and even simple pleated panel filters in some areas – must be red-bagged. This is arguably unfair, but only a few states allow a less-costly classification, and the landfills are clearly in charge. To them, this is revenue, pure and simple. *And as many approach capacity or close, their ability to raise costs further will only increase.*

Given this reality, there is a compelling incentive to reduce the volume of solid waste heading for landfills – to use green thinking for meaningful source reduction.

Source reduction is a guiding principle for Camfil's green filter technology. During a two-year period, a hospital using Camfil's 5-Star premium filters can reduce the number of filters it sends to the landfill by 56%.

Disposal and labor to change filters is a huge, but reducible, cost. And, it can be reduced more quickly than perhaps any other line item on a hospital's budget, while giving the hospital bragging rights on an issue that every patient, every board member, and every community and political leader cares about.

Carbon Footprint

Camfil's 30/30®, Durafil ES® and Filtra 2000® air filters have the lowest carbon footprints in the industry. For many health care facilities, they are an effective, and simple way to comply with facility-wide initiatives to reduce carbon footprint.

"During a 2-year period, a hospital using Camfil's 5-Star premium filters can reduce the number of filters it sends to the landfill by 56%."

"DO MORE WITH LESS" – HOW THE *REAL* MEANING WORKS IN EVERYONE'S FAVOR

"To 'do more with less,' choose critical air filtration products based on true life cycle costs."

"Do more with less" is the mantra that resonates throughout every health care facility today. It has become a catch phrase for penny-pinching, and a call for people to work harder with fewer resources. The origin of this common phrase however, was to allow new tools to make work easier.

Budget cuts are on everyone's mind, and one effective strategy for managing this reality is by choosing critical products by their true life cycle costs – what they cost, with **all** factors considered, compared to alternatives, over time.

Camfil has developed a family of air filtration products for every area of every health care environment with this principle in mind. We have well-engineered filtration solutions that satisfy every important health care requirement:

- energy savings
- performance at rated efficiency throughout the life of the filter
- low frequency of change-outs
- low labor and waste disposal

The 5-Star premium filters described in the pages that follow document, in detail, how these filters deliver these advantages – and present an intelligent alternative to the low-end commodity products pushed by many manufacturers and buying groups.

Camfil's many health care case studies prove the depth of knowledge and experience behind the development of intelligent, cost-efficient filtration solutions for medical facilities.

The exhortation to "do more with less" has never been louder than it is today. But by understanding its original meaning – to let technology – new tools – lighten the burden, we think America's hospitals, and their patients, administrators, and purchasing professionals, will all breathe easier.

A study conducted by the U.S. General Accounting Office, and included as testimony before the *Subcommittee on Antirust, Competition, and Business and Consumer Rights, Committee On The Judiciary, US Senate* is summarized here.

The study was initiated because of persistent andwidespread concerns that GPO practices block access to hospital decision-makers, and ultimately deny patients and facility owners access to innovative or superior medical products.

For the hospitals studied, the use of a GPO contract did not guarantee that the hospital saved money: GPO's prices were *not* always lower and were often higher than prices paid by hospitals negotiating directly with vendors. Specifically:

- Whether hospitals using GPO contracts received better prices than hospitals that did their own contracting varied widely. At times for some products, hospitals using GPO contracts received better prices.

But in other instances, hospitals using a GPO contract got prices that were higher – up to 39% higher than hospitals not using a GPO contract.

- Similar results held for hospitals using large GPOs – those whose members purchase more than $6 billion per year with their contracts – compared to hospitals buying on their own.

- Price savings differed by size of hospital. Large hospitals – those with more than 500 beds – often obtained lower prices on their own than by using a GPO.

By contrast, small and medium-sized hospitals were more likely to obtain price savings using a GPO contract.

But these hospitals' experiences also ranged widely: Some hospitals' GPO contract prices were lower – and others much higher – than prices negotiated by hospitals on their own.

Joint purchasing arrangements with GPOs may enable some members to achieve efficiencies, some of the time. They may also be an acceptable way to buy toilet paper and stationery.

But where products are critical to health and health care, such arrangements can obscure what is important, limit options, and produce less than optimum financial results for the hospital and its owners. These are not the outcomes any of us want.

Camfil, a world leader in medical facility filtration, understands the dynamics of GPOs, and the challenges of today's health care administrators.

Today, more than ever, we are committed to providing thoughtful, intelligent solutions, backed by science, documented by analysis, and proved in some of the largest and most prestigious medical facilities in the world.

THE FIRST STEP: COMMON AREA FILTRATION

Corridors should have air supply through MERV 8 prefilters and MERV 14 final filters. Because of their intermittent occupancy, just 2 air changes per hour are required.

The use of MERV 8 prefiltration and MERV 14 final filtration, along with the proper number of air changes for the space, significantly reduces the incidence of nosocomial transfer.

Facilities should insist on "getting what they pay for." Specifically, they should demand that a MERV 14 filter ***perform*** as a MERV 14 filter at installation and throughout the filter's life. Coarse fiber products lose efficiency over time. Fine fiber products, such as Camfil's 5-Star filters, maintain their efficiency over time.

Camfil's ASHRAE Testing Guide details ASHRAE Standard 52.2-2007 and the importance of MERV-A consideration.

The air systems in patient rooms are engineered to protect the patient, employees and visitors from infection transfer, and should have a minimum of 6 air changes per hour through a system that uses MERV 8 prefiltration and MERV 14 final filtration.

Filter Efficiencies for Central Ventilation and Air Conditioning Systems in General Hospitals

Minimum Number of Filter Beds	Area Designation	Filter Bed #1 Filter Efficiency	Filter Bed #2 Filter Efficiency
2	Orthopedic operating room Bone marrow transplant operating room Organ transplant operating room	MERV 8 MERV-A 8	HEPA filters at air outlets
2	General procedure operating rooms Delivery rooms Nurseries Intensive care units Patient care rooms Treatment rooms Diagnostic and related areas	MERV 8 MERV-A 8	MERV 14 MERV-A 14
1	Laboratories Sterile storage	MERV 13 MERV-A 13	
1	Food preparation areas Laundries Administrative areas Bulk storage Soiled holding areas	MERV 8 MERV-A 8	

MERV = Minimum Efficiency Reporting Value based on ASHRAE Standard 52.2-2007.
Camfil also recommends the additional requirement of MERV-A from Appendix J in ASHRAE Standard 52.2.
MERV-A is an indicator of how a filter will perform over time (I.E.: will the filter maintain published efficiency throughout the life of the filter).
This is a recommendation and not currently published in the reference. See Camfil publication
The New Air Filter Standard 52.2-2007, Today's "Real Life" Product Performance.
Ref: *ASHRAE Handbook, HVAC Applications*, 2007, Table 1, 7.3.

Operating suite with HEPA filter terminal units in the ceiling.

HEPA filters are specified for air supplies serving protective environment rooms for treatment of patients with high susceptibility to infection.

HEPA filters are also specified for discharge air from fume hoods or safety cabinets in which infectious or radioactive materials are processed. The filter system should be designed to permit safe removal, disposal, and replacement of contaminated filters.

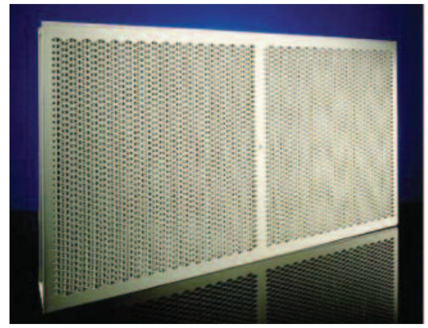
A HEPA filter, by definition, has an efficiency of at least 99.97% when tested on particles 0.3 micron in size. The key word is "tested". A HEPA filter must be tested and certified by the manufacturer as to efficiency, rated airflow and resistance to airflow.

Always require that a Certificate of Conformance be included with each HEPA installed in your facility.

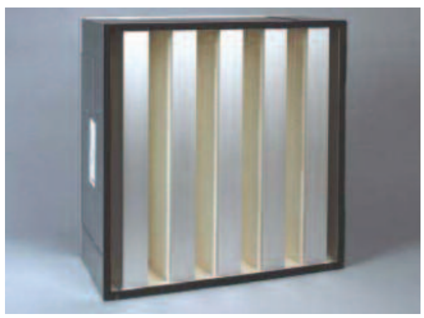
The Certificate of Conformance includes complete testing data and ensures that the manufacturer has built the product to the required specifications.

This requirement will eliminate vendors that would skip this important step, and those that "batch test," rather than individually testing each filter.

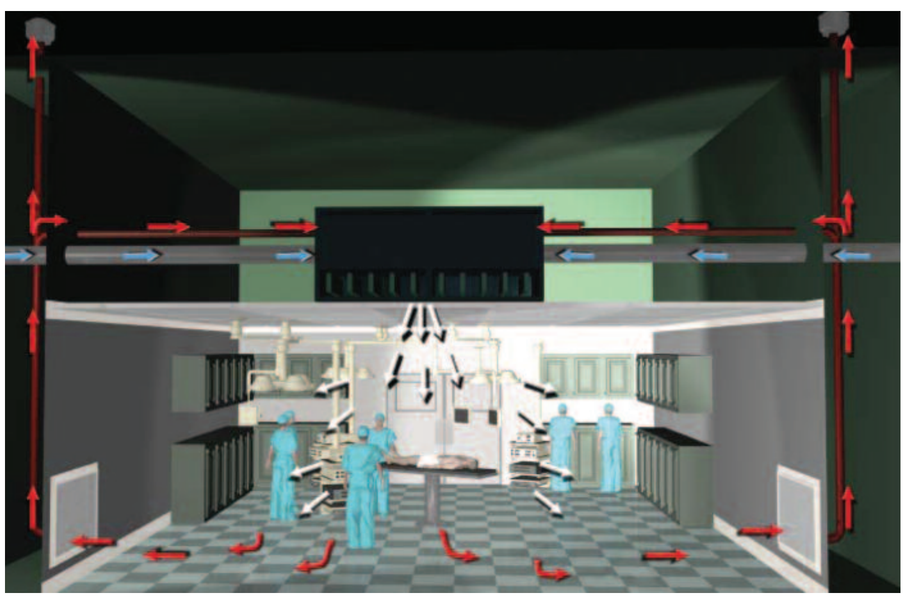
Certificates of Conformance for each filter should be filed for evidence should liabilities arise and as support documentation for facility audits.



The Camfil Slimline HEPA DCM ceiling air filter terminal unit. The entire module may be replaced periodically (ducted ceiling module) or the filter can be changed within the module (room side replaceable). Commonly applied in hospital operating suites or pharmaceutical preparation areas.



For systems that use HEPA filters in filter banks or housings, increased media filters such as the Filtra 2000 can significantly reduce energy usage and increase airflow to the operating suite.



With terminal air filter units installed directly above the patient area, purified air is washed down over the patient and operating personnel and contaminants are removed through air returns. Prescribed amounts of outside air may also be introduced to replace exhaust air and maintain operating suites at positive pressure.

SPECIAL CONCERNS FOR EVERY FACILITY MANAGER: GASEOUS CONTAMINANTS

Medical facilities contend with numerous substances that produce odors and gaseous contaminants. Gaseous contaminants can also be introduced from the outside, or from hospital processes or loading docks.

Many areas are susceptible to unacceptably high levels of ozone which also have an adverse effect on patients.

This chart shows the filtration that will be effective for removing gaseous contaminants from six specialized areas.

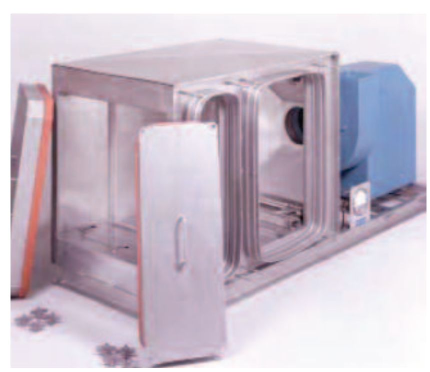
Possible Gas-Phase Contaminant Removal Applications in Medical Facilities	
AIDS exam rooms	HEPA filtration and RigaCarb 205, CF panels or CamCarb Canisters containing CFS-205 media to control acute aldehydes used for sterilization.
Animal labs	CFS-204 acid-impregnated carbon (for ammonia odors) and Campure 6XL potassium permanganate
Diesel odor HVAC intakes from loading docks and from periodic emergency power generator testing and operation, construction equipment	CityCarb, or RigaCarb 205 if space and budget are tight. Canisters containing a blend of CFS-201 activated carbon and Campure 6XL potassium permanganate if space and budget allow. Include 30/30 and MERV-13 Durafil ES for capture of the fine particulate associated with combustion odors.
In vitro fertilization labs (IVF)	One stage of CFS-202 caustic-impregnated carbon and a second stage of Campure 6XL potassium permanganate. De-rated systems with contact times >0.2 seconds have been applied successfully. CamCarb canisters are generally recommended for longer life at high efficiency.
Morgue	CamCarb canisters or CF panels containing a blend of Campure 6XL (breakdown of body fat releases H_2S) and CFS-204 acid-impregnated carbon for ammonia.
Medivac helipads adjacent to rooftops and air intakes adjacent to loading docks	CityCarb, or RigaCarb 205 if space and budget are tight. Canisters containing a blend of CFS-201 activated carbon and Campure 6XL potassium permanganate if space and budget allow. Include 30/30 and MERV-13 Durafil ES for fine particulate associated with combustion odors.

Control of Mycobacterium Tuberculosis

CDC's *Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health Care Settings*, (2005) can be downloaded at www.cdc.gov.

Some key points relative to air filtration include:

- Patient and treatment rooms should be under negative pressure to prevent droplet nuclei from transferring to other areas, including adjoining interior rooms.
- 100% exhaust to atmosphere is needed, possibly through a HEPA filter, if exhaust is within 30 ft. of human habitation areas, or other means of reintroduction back into the building *(windows, vents, doors, etc.)*.
- Containment housings and filtration equipment are required in some states – consult Camfil product sheets 3401/3402/3409.



Complete bag-in/bag-out system for the 'containment' of contaminants and protection of employees during filter change.

INFECTION SOURCES AND THE IMPORTANCE OF AIR CHANGES IN ACHIEVING REMOVAL EFFICIENCY

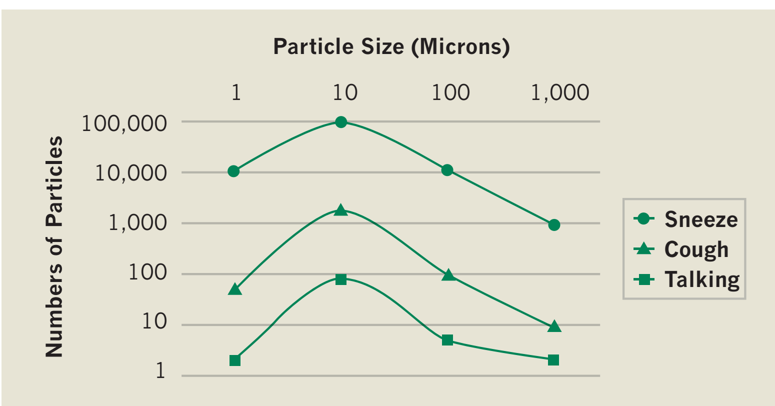
Medicare covers 46.9 million elderly and spends $569 billion per year in medical reimbursements.

With the increased use of managed care, and incentives for outpatient care, hospitals have a concentrated population of seriously ill patients. Many are also immunosuppressed or being prescribed antibiotics which can encourage the evolution of drug-resistant pathogens.

These factors, along with lapses in sanitation protocols and the mobility of medical staff, (which provides a pathway for pathogens to spread), further confound a health care institution's best efforts to prevent hospital-acquired infection.

The tables at the end of this brochure describe air filtration requirements for new construction in medical facilities as prescribed by AIA – the American Institute of Architects. Much of the same information is also available in the ASHRAE American Society of Heating, Refrigeration, and Air Conditioning Engineers Handbook.

Bold listings denote frequently cited air changes per hour for patient-care areas. Moving the air through the filtration system is as important as filter efficiency.



Duguid, et. al., 1954

Air Changes	Time (Minutes) Required for Removal: 99% Efficiency	99.9% Efficiency
2	**138**	**207**
4	**69**	**104**
6	46	69
8	**35**	**52**
10	28	41
12	23	35
15	18	28
20	**14**	**21**
50	**6**	**8**

Microorganisms Associated with Airborne Transmission

Numerous Reports in Health Care Facilities	Fungi	Bacteria	Viruses
Atypical, occasional report	Aspergillus spp. + Mucorales (Rhizopus spp.)	Mycobacterium tuberculosis	Measles (rubeola) virus Varicella-zoster virus
Airborne in nature; Airborne transmission in health care settings not described	Acremonium spp. Fusarium spp. Pseudoallescheria boydii Scedosporium spp. Sporothrix cyanescens	Acinetobacter spp. Bacillus spp. Brucella spp. Staphylococcus aureus Group A streptococcus	Smallpox virus (variola) Influenza viruses Respiratory syncytial virus Adenoviruses Norwalk-like virus
Under investigation	Coccidioides immitis Cryptococcus spp. Histoplasma capsulatum	Coxiella burnetii (Q fever)	Hantaviruses Lassa virus Marburg virus Ebola virus Crimean-congo virus

A medical facility's first line of defense against infections transfer is its filtration system.

This chart shows the microorganisms associated with airborne transmission.

CAMFIL FILTRATION RECOMMENDATIONS FOR SPECIFIC HOSPITAL AREAS

All filter recommendations meet the required MERV per Standard 52.2-2007 and the corresponding value of MERV-A when evaluated per the procedure in Appendix J of the same standard.

Air Intakes Adjacent to Heliport

- MERV 8
- MERV 14
- Gaseous contaminant control

Laundries/Maintenance

- MERV 8

Pharmacy

- MERV 8 Prefilter
- HEPA Terminal Filtration

Waiting Rooms

- MERV 8
- MERV 14

Surgery/Operating Suites

- MERV 8 Prefilter
- MERV 13 Final*
- HEPA Terminal Filtration

Infectious Diseases

- MERV 8 Prefilter
- MERV 13 Final*
- HEPA Terminal Filtration @ Outlets

General Patient Rooms

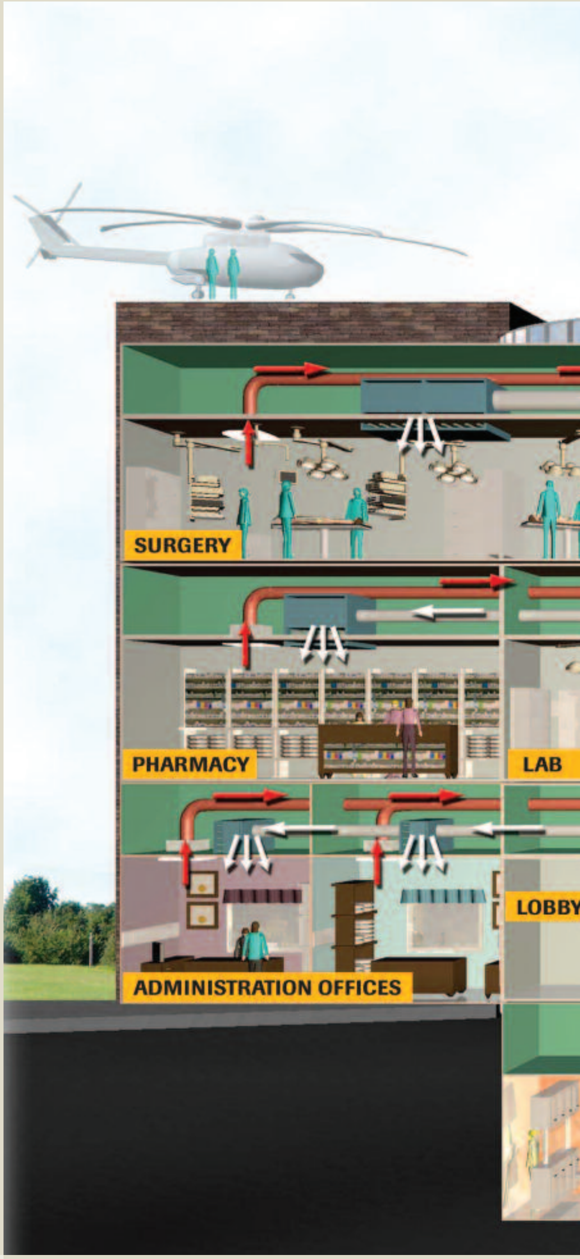
- MERV 8
- MERV 14

Pediatric Care

- MERV 8
- MERV 14

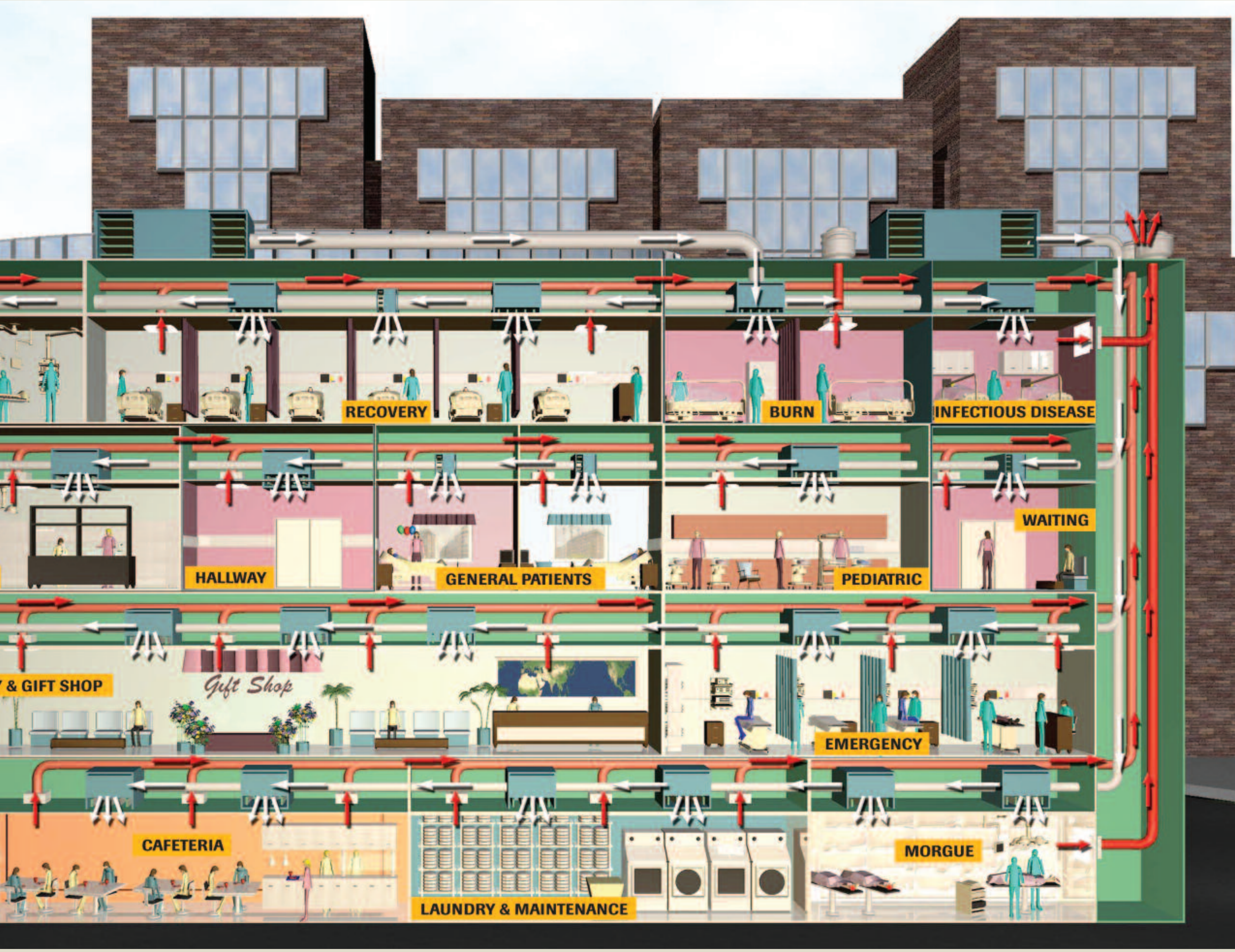
Air Intakes Adjacent to Loading Docks

- MERV 8
- MERV 14
- Gaseous contaminant control



In the near future, The United States Pharmacopoeia General Chapter 797 will likely become the standard of care for achieving ISO Cleanliness levels in pharmaceutical preparation areas. As of this writing, ten states require full or partial compliance, with others slated to follow.

Camfil has the products to elevate your pharmaceutical preparation area to ISO Cleanliness levels, while also generating substantial benefits in terms of HVAC-related energy costs. Camfil representatives are ready to assist, with useful information and insights that can save time and effort during the pharmaceutical area design phase, whether the project is new construction, or renovation.



Burn Treatment Rooms

- MERV 8 Prefilter
- MERV 13 Final*
- HEPA Terminal Filtration @ Outlets

Emergency

- MERV 8
- MERV 14
- Consider HEPA filters after risk evaluation (consult your local Camfil distributor)

Morgue

- MERV 8
- MERV 14
- Adsorbers of oxidizers for gaseous contaminant control

* Camfil recommends filter for loading protection of downstream HEPA filter. See chart page 17.

FOR MAINTENANCE PROFESSIONALS: INSTALLATION, MAINTENANCE COSTS, AND WASTE REDUCTION

Frames and Housings

A filter is only as effective as its holding mechanism. Deficient holding frames, or housings that have gaps or leak paths around the filter can severely reduce filter performance.

A 1/4-inch gap around a 24-inch by 24-inch prefilter equates to 18% air bypass, or the equivalent of a 3-inch hole in the middle of the filter. A gap around a high-efficiency filter is even worse.

Camfil housings and frames include the highest quality gasketing material to ensure that all of the air moving through the system is treated by the air filters. With Camfil designed housings, we guarantee less than 1/2 of 1% leakage across the installed filters.

Gasketing

The HEPA filter should be aligned properly, assuring that the gasketing, when compressed, will seal all surfaces from air bypass. The filter sealing mechanism should compress the gasketing material to 50% of its original depth.

Camfil HEPA filters include a unique poured-in-place seamless gasket that prevents leaks through gasketing junctures as found in competitive filters. *(Seamless corner shown in photo right.)*

In systems using crank-type housings, torque adjustment should be checked with each filter change. Where a fluid sealing method is used, the knife edge should uniformly penetrate half the depth of the sealant.

HEPA Filter Service Life

Initial considerations concerning the service of HEPA filtration relate to minimizing pressure drop within the HVAC system for energy conservation, and extending the life of the HEPA filters. The chart here shows the typical life extensions of HEPA filtration when various levels of ASHRAE prefilters are used.

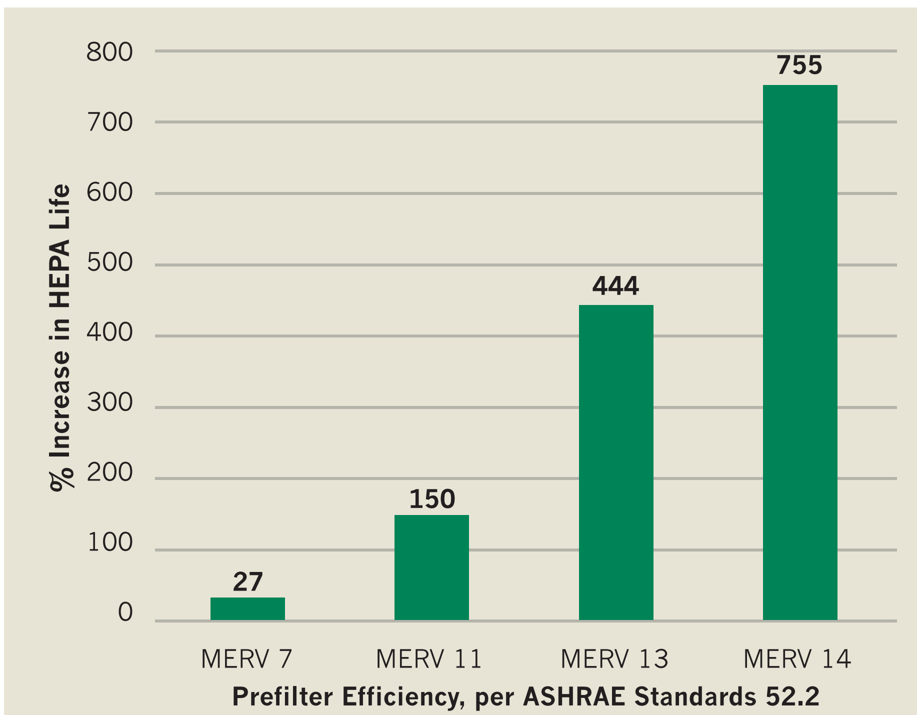
When the Life Cycle Cost of the HEPA cost is considered, MERV 13 or MERV 14 ASHRAE prefiltration is the norm. A 5-micron size particle looks like a boulder to HEPA filtration media. The microfine glass fibers that make up the media of the HEPA filter have an operating fiber diameter of 0.67 micron. Large particles can block a relatively expansive area of the filter, increasing pressure drop prematurely and reducing the effectiveness and life of the filter.

Enclosures

HEPA filters are available in a variety of enclosures, including galvanized steel, Galvaneal, stainless steel, wood or particle board. When a wooden framed filter expands or contracts with the rise and fall of moisture-laden air, the integrity of the filter seal may be compromised.

If HEPA filters with wood, or particle board frames are used in HVAC systems, gasketing integrity, filter enclosure integrity, and gasketing torque compression should be checked every 8 weeks.

Where moisture or high humidity is involved, most facilities use metal casings to avoid the problems of wood components in a moisture-laden environment.



The tasks involved in changing HEPA filters, such as removing existing, ensuring the integrity of the holding mechanism, mounting the new units, certifying performance, and disposing of the old filters, add to the expense of a replacement HEPA filter. This chart shows the increase in life with various selected prefilters. Camfil recommends that HEPA filters be protected from high loading with MERV 8 or MERV 13 prefilters. If a total cost of ownership maintenance program is implemented, this methodology can also produce substantial energy savings.

INFECTION CONTROL REFERENCE GUIDE

Staphylococcus aureus has a diameter of 0.8 micron to 1.0 micron. An air filter, having an efficiency of MERV 14, when rated under ASHRAE Standard 52.2, will remove more than 90% of this contaminant.

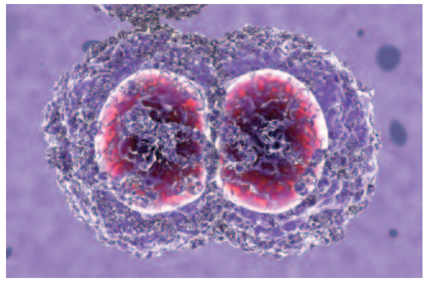
Tuberculosis has a diameter of 0.2 micron to 0.5 micron and a rod length of 1.0 micron to 4.0 microns. Although an ASHRAE MERV 14 filter should, in all probability, remove at least 90% of this contaminant, assurance can only be provided through the use of HEPA filtration.

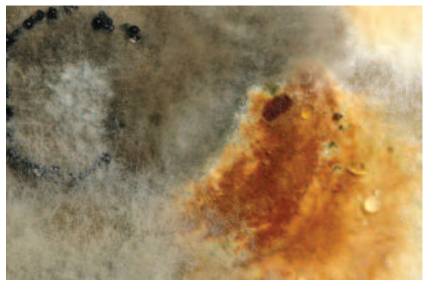
Tuberculosis contaminant that approaches the media on a perpendicular may penetrate the filter based upon its diameter of 0.2 to 0.5 micron. **HEPA filtration should be strongly considered in areas servicing tuberculosis patients.** Filter selection should include consideration of the size and type of contaminant to be captured.

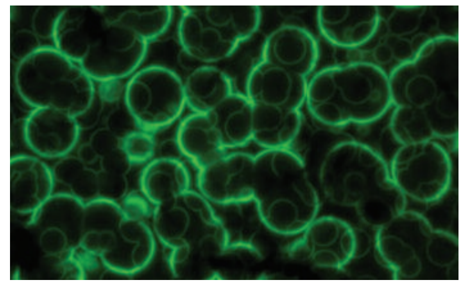
Aspergillus is easily removed by MERV 14 level filtration.

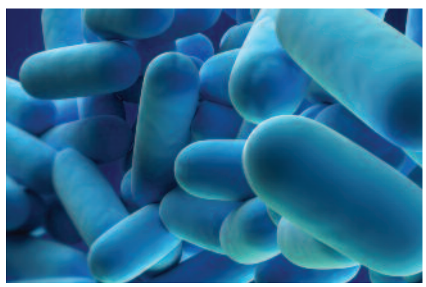
Airborne transmission occurs by dissemination of either airborne droplet nuclei (small-particle residue 5-micron or smaller in size of evaporated droplets containing microorganisms that remain suspended in the air for long periods of time), or dust particles containing the infectious agent.

Microorganisms carried this way can be dispersed widely by air currents and may be inhaled by a susceptible host within the same room or over a longer distance, depending on environmental factors. Therefore, special air handling and ventilation are required to prevent airborne transmission.









Legionella, Mycobacterium tuberculosis and the rubeola and varicella viruses are also of concern.

Room air cleanliness is always a function of filter efficiency and the number of air changes. Many nosocomial maladies are easily removed with a MERV 14 filter. Viruses and other sub-micron contaminants cluster and often adhere to larger items that easily become airborne such as skin flakes. Many are removed from the airstream when the larger particles are captured by the filter.

The chart on page 13 notes the time required to obtain a desired removal efficiency (99% and 99.9% listed). This removal efficiency is just a factor of moving air through the filters so the filters can do what they were designed to do; remove particles from the airstream.

Operating suites are designed with airflows of 15 air changes per hour or more. Some ultra-critical care suites have air changes of 30-50 per hour.

HEALTH CARE INDUSTRY GUIDELINES, MINIMUM REQUIREMENTS

Hospital Area	Filter Efficiency Bed #1	Filter Efficiency Bed #2	Minimum Total Air Changes Per Hour	Minimum OSA Changes Per Hour	Relative Room Pressure	Relative Humidity (%)	Temperature °F
Surgery and Critical Care							
Operating/surgical cystoscopic rooms	MERV 8	HEPA	15	3	P	30-60	68-73
Delivery room		MERV 14	15	3	P	30-60	68-73
Recovery room		MERV 14	6	2	-	30-60	70-75
Critical and intensive care		MERV 14	6	2	-	30-60	70-75
Newborn intensive care		MERV 14	6	2	-	30-60	72-78
Treatment room		MERV 14	6	-	-	-	75
Trauma room		HEPA	15	3	P	30-60	70-75
Anesthesia gas storage		MERV 14	8[1]	-	N	-	-
Endoscopy		MERV 14	6	2	N	30-60	68-73
Bronchoscopy		MERV 14	12[1]	2	N	30-60	68-73
ER waiting rooms		MERV 14	12[1]	2	N[2,3]	-	70-75
Triage		MERV 14	12[1]	2	N[2]	-	70-75
Radiology waiting rooms		MERV 14	12[1]	2	N[2,3]	-	70-75
Procedure room		MERV 14	15	3	P	30-60	70-75
Nursing							
Patient room	MERV 8	MERV 14	6[4]	2	-	-	70-75
Toilet room		MERV 14	10[1]	-	N	-	-
Newborn nursery suite		MERV 14	6	2	-	30-60	72-78
Protective environment room[5]		HEPA	12	2	P	-	75
Airborne infection isolation room[5]		HEPA	12[1]	2	N[3]	-	75
Isolation alcove or anteroom[3,5]		MERV 14	10[1]	-	N/P	-	-
Labor/delivery/recovery		MERV 14	6[4]	2	-	-	70-75
Labor/delivery/recovery/postpartum		MERV 14	6[4]	2	-	-	70-75
Patient corridor		MERV 14	2	-	-	-	-

Footnotes (Additional notes on page 20):

1 All air exhausted to the outside.

2 In a ventilation system that recirculates air, HEPA filters can be used in lieu of exhausting the air from these spaces to the outside. In this application, the return air shall be passed through the HEPA filters before it is introduced into any other spaces.

3 If it is not practical to exhaust the air from the airborne infection isolation room to the outside, the air may be returned through HEPA filters to the air-handling system exclusively serving the isolation room.

4 Total air changes per room for patient rooms, labor/delivery/recovery rooms, and labor/delivery/recovery/postpartum rooms may be reduced to four changes when supplemental heating and/or cooling systems (radiant heating and cooling, baseboard heating, etc.) are used.

5 The protective environment airflow design specifications protect the patient from common environmental airborne infectious microbes (i.e., Aspergillus spores). These special ventilation areas shall be designed to provide directed airflow from the cleanest patient care area to less clean areas. These rooms shall be protected with HEPA filters at 99.97 percent efficiency for a 0.3 micron sized particle in the supply airstream. These interrupting filters protect patient rooms from maintenance-derived release of environmental microbes from the ventilation system components. Recirculation HEPA filters can be used to increase the equivalent room air exchanges. Constant volume airflow is required for consistent ventilation for the protected environment. If the facility determines that airborne infection isolation is necessary for protective environment patients, an anteroom should be provided. **Rooms with reversible airflow provisions for switching between protective environment and airborne infection isolation functions are not acceptable.**

6 The infectious disease isolation room described in these guidelines is to be used for isolating the airborne spread of infectious diseases, such as measles, varicella, or tuberculosis. The design of airborne infection isolation (AII) rooms should include the provision for normal patient care during periods not requiring isolation precautions. Supplemental recirculating devices may be used in the patient room, to increase the equivalent room air exchanges; however, such recirculating devices do not provide for the outside air requirements. Air may be recirculated within individual isolation rooms if HEPA filters are used. **Rooms with reversible airflow provisions for switching between protective environment and AII functions are not acceptable.**

HEALTH CARE INDUSTRY GUIDELINES, MINIMUM REQUIREMENTS (CONTINUED)

Hospital Area	Filter Efficiency Bed #2	Filter Efficiency Bed #2	Minimum Total Air Changes Per Hour	Minimum OSA Changes Per Hour	Relative Room Pressure	Relative Humidity (%)	Temperature °F
Ancillary or Support Areas							
X-ray (surgical/catheterization/critical care)	MERV 8	MERV 14	15	3	P	30-60	70-75
X-ray (diagnostic & treatment) darkroom		MERV 14	6	-	-	-	75
Darkroom		MERV 14	10	-	N	-	-
Laboratory:							
General	MERV 8	MERV 13	6	-	-	-	75
Biochemistry		HEPA	6	-	P	-	75
Cytology		MERV 13	6[1]	-	N	-	75
Glass washing		MERV 13	10[1]	-	N	-	-
Histology		MERV 13	6[1]	-	N	-	75
Microbiology		MERV 13	6[1]	-	N	-	75
Nuclear medicine		MERV 13	6[1]	-	N	-	75
Pathology		MERV 13	6	-	N	-	75
Serology		HEPA	6[1]	-	P	-	-
Sterilizing		MERV 14	10[1]	-	N	-	-
Autopsy room	MERV 8	MERV 14	12[1]	-	N	-	70
Non-refrigerated body-holding room		MERV 14	10	-	N	-	-
Pharmacy		HEPA	4	-	P	-	-
Diagnostic and Treatment						-	
Examination room	MERV 8	MERV 14	6	-	-	-	75
Medication room		MERV 14	4	-	P	-	-
Treatment room		MERV 14	6	-	-	-	75
Physical therapy and hydrotherapy		MERV 14	6	-	N	-	75
Soiled workroom or soiled holding		-	10[1]	-	N	-	-
Clean workroom or clean holding		MERV 14	4	-	P	-	-
Sterilizing and Supply							
ETO - sterilizer room	MERV 8	MERV 14	10[1]	-	N	30-60	75
Sterilizer equipment room		MERV 14	10[1]	-	N	-	-
Central medical and surgical supply:							
Soiled or decontamination room	MERV 8	MERV 14	6[1]	-	N	-	68-73
Clean workroom		MERV 14	4	-	P	30-60	75
Sterile storage		MERV 14	4	-	P	Max 70	-
Service							
Food preparation center	MERV 8	-	10	-	-	-	-
Warewashing		-	10[1]	-	N	-	-
Dietary day storage		-	2	-	N	-	-
Laundry, general		-	10[1]	-	-	-	-
Soiled linen (sorting and storage)		-	10[1]	-	N	-	-
Clean linen storage		-	2	-	P	-	-
Soiled linen and trash chute room		-	10[1]	-	N	-	-
Bedpan room		-	10	-	N	-	-
Bathroom		-	10	-	N	-	75
Janitor's closet		-	10[1]	-	N	-	-

Additional Notes:

Where two filter beds are indicated Filter Bed #1 should be upstream of air conditioning equipment and Filter Bed #2 should be downstream of the supply fan. Where only one filter is indicated that filter should be located upstream of the air conditioning equipment.

HEPA filtration designated at 99.97% when evaluated on particles 0.3 micron in size. HEPA filters must be individually tested and certified by the manufacturer and should be commissioned to conformed efficiency after site installation.

Protective environment rooms, or a bedded unit where severely immunosuppressed patients are cared for (e.g., bone marrow transplant units) require HEPA filtration as their final stage before room introduction. Infectious isolation is a room with an inward air movement relationship to adjacent areas where a patient with airborne infectious diseases may be a risk to the surrounding area. Protective isolation is a room with an outward air movement relationship to adjacent areas where the patient may be at risk from the surrounding areas. Protective environment rooms shall be designed to provide directed airflow from the cleanest patient care area to less clean areas. These rooms shall be protected with HEPA filters at 99.97 per cent efficiency for a 0.3 micron size particle in the supply airstream.

Camfil participates in several guideline and standards-creating bodies whose logos are shown below. Our goal: to ensure that the air filtration industry advocates for the benefit of those we serve.

United States Green Building Council (USGBC)

Its mission is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. **www.usgbc.org**

United States Environmental Protection Agency (EPA) Energy Star Partner

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy. **www.energystar.gov/**

Camfil supports the efforts of our employees as individual members of these organizations, seeking to improve environments for people and processes worldwide.

The American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)

Advances technology to serve humanity and promote a sustainable world. **www.ashrae.org**

American Society for Healthcare Engineering (ASHE)

The American Society for Healthcare Engineering (ASHE) is one of the personal membership groups of the American Hospital Association (AHA). ASHE represents a diverse network of 9,400 members dedicated to optimizing the health care physical environment.

Institutes of Environmental Sciences & Technology (IEST)

Founded in 1953, IEST is a multi-disciplinary, international society whose members are internationally recognized for their contributions to the environmental sciences. **www.iest.org**

European Committee for Standardization

CEN, was founded in 1961 by the national standards bodies in the European Economic Community and EFTA countries. **www.cen.eu**

International Organization for Standardization

ISO standards add value to all types of business operations. They contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner and make trade between countries easier and fairer. **www.iso.org**

CSA International

CSA International tests products for compliance to national and international standards, and issues certification marks for qualified products.

The Canadian Healthcare Engineering Society (CHES)

CHES exists to help its members manage the environment which is essential for efficient and effective health care delivery. They publish information to assist their members in providing the best medical facility care possible.

THE MEANING OF "SUSTAINABILITY"

"I want Camfil to be recognized as the 'sustainability leader' in the air filtration industry by our clients, our partners and the markets in which we compete."

Alan O'Connell
CEO, Camfil

The Meaning of "Sustainability"

Sustainable development meets the needs of the present generation without compromising the ability of future generations to meet their needs.

Sustainability as a business approach creates long-term shareholder value by embracing opportunities, and managing risks from economic, environmental and social developments.

Sustainability and social responsibility combine in a concept whereby organizations take responsibility for the impact of their activities on customers, employees, shareholders, communities and the environment.

Camfil has a long and successful track record in the pursuit of green and sustainable strategies.

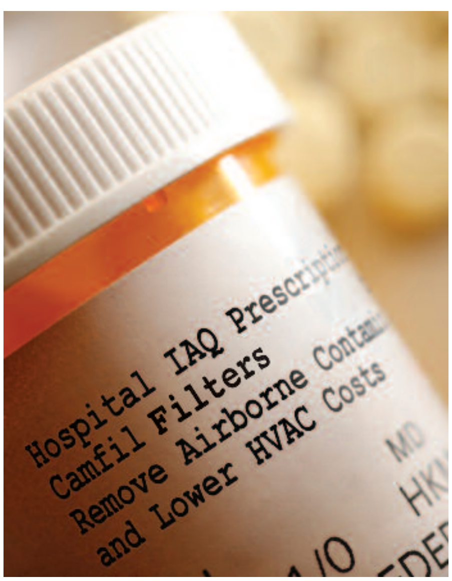
Developments as diverse as Hi-flo® Green, Ecopleat Green, Life Cycle Costing tools, Opakfil Green, CamCarb Green, the SAVER analysis tool and Energy Cost Indexing illustrate a decades-long commitment to environmental principles and practices, and environment-driven decision-making.

The Camfil Sustainability Model is threefold:

Social – We are committed to health preservation through controlled indoor air quality in public residential and work environments, the safety of materials used in filter construction, and cleanliness of ventilation installations.

Environmental – Camfil reduces greenhouse gas emissions through energy-efficient filters, and reduces environmental impact through good manufacturing practices and by supplying filters that perform to their rated efficiency throughout their service life.

Economic – Our Life Cycle Cost Reduction Strategy is a powerful tool that helps customers achieve greatest air filtration value, at lowest total cost. And because Camfil filters perform at their rated efficiency through the filter's life, they directly contribute to higher overall productivity and fewer days of sick leave.



For information on any of the products listed in this brochure or to access reference materials, please contact us at literature@camfil.com.

camfil

HEALTH CARE FACILITIES

Our Health Care Commitment

Camfil is dedicated to the principle that America's health care providers, their patients, and their communities are best served by exceptionally high quality air filtration, tailored to individual areas, that promotes the health and well-being of everyone.

Take a moment to learn more about the mobile lab, In-situ testing units for individual AHUs, and Life Cycle Cost analysis software. Put them to work to help you determine the best performance outcome, and the best value, for your health care facility. Call your Camfil representative today.

www.camfil.com
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Tel: 973-616-7300, Toll Free: 866-422-6345, Fax: 973-616-7771